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ABSTRACT

Used as an integral part of the migrant student skills system operated by the Migrant Student Record Transfer System (MSRTS), the mini-math skills list contains a catalog of math skills typical of the 4-6 grade range. The document presents an explanation of terminology used for MSRTS mini-math outline: areas, topics, subtopics, and skills. It contains displays for six major areas: (1) number meaning, (2) whole numbers, (3) fractions, (4) measurement, (5) probability and statistics, and (6) sets, and lists topics, subtopics, and skills for each area. (JD)

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NATIONAL MIGRANT EDUCATION PROGRAM

MINI-MATH SKILLS 4-6

August 1979

The Math Skills was developed in cooperation with the Migrant Branch of the United States of Education, the National Association of State Directors of Migrant Education, the Migrant Student Record Transfer System, and a committee of states which we gratefully acknowledge:

Arizona	Michigan
California	New York
Colorado	New Mexico
Florida	Oregon
Idaho	Pennsylvania
Kansas	Texas

Washington

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FOREWORD

This document contains a catalog of math skills typical of the 4-6 grade range. The math skills list is an integral part of the migrant student skills system which is operated by the Migrant Student Record Transfer System and its users.

This catalog, whose content was developed by hundreds of educators across the United States, permits teachers to report math skills mastered and under study of migrant students. The reported skills become part of each student's record on the MSRTS and will thereby be available to teachers, aides, and tutors serving migrant students.

The skills list presented here is not intended to represent a curriculum or an implied learning sequence. This is not an exhaustive list of 4-6 skills.

"The work upon which this publication is based was performed pursuant to Contract 300-76-0070 with the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred."

EXPLANATION OF TERMINOLOGY FOR MSRTS MINI-MATH OUTLINE

1. **AREA:** *An Area is a collection of skills under a particular discipline such as reading, math, etc. Whole Numbers, Fractions, Decimals, Percent, Measurement, Geometry, Probability and Statistics, and Sets are the eight major Areas.*
2. **TOPICS:** *A Topic is a collection of skills in one or more Subtopics. The Topics are listed under the eight major Areas on the Mini-Math Outline.*
3. **SUBTOPICS:** *A Subtopic is a collection of closely related skills. All items listed under the Topics (in the manual) will be referred to as Subtopics.*
4. **SKILLS:** *A Skill is a discrete and observable unit of student behavior. All items listed under the Subtopics (in the manual) will be referred to as Skills.*
5. **DISPLAYS:** *The group of skills from which a teacher may select specific skills are referred to as Displays.*

The following page is a copy of the MSRTS Mini-Math Outline.

MSRTS MINI-SKILLS OUTLINE

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NUMBER MEANING

BASIC

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
070 Numerals and Associated Word Names	07001	A. The numerals 0 - 9	Names the numerals	3 (three)
		B. Word names "zero" ... "nine"	Identifies the numerals corresponding to the word names	zero (0)
	07002	A. The numerals 10, 20, 30 ... 100	Names the numerals	40 (forty)
		B. Word names "ten," "twenty," ... "one hundred"	Identifies the numerals corresponding to the word names	seventy (70)
073 Signs (<, >, =) and Associated Word Names	07301	A collection of pairs of whole numbers	Identifies, using the symbols "<," ">," "=", the relationship among the pairs of numbers	47 () 51 (<)
	07302	A. The symbols "=", "<," ">"	Names the symbols	< (less than)
		B. Word names "equal to," "less than," and "greater than"	Identifies the symbols corresponding to the word names	equal to (=)
076 Ordination	07601	A. A row of ten objects	Names the ordinal position (first, second ... tenth) of a specified object	(. . . ← (fourth) . . .)
		B. The name of an ordinal position (first, second ... tenth)	Identifies object occupying the given ordinal position	seventh → (.)
079 Counting	07901	A. Arrays of the numerals 1 - 10	Identifies the array representing counting 1 - 10	1 2 3 4 5 6 7 8 9 10 (child associates numerals with counting sequence)
		B. Arrays of the numerals 1 - 100	Identifies the array representing counting 1 - 100	Same as 29a with numerals 1 - 100
		C. Arrays of the numerals 1 - 100,000	Identifies the array representing counting 1 - 100,000	Same as 29a with numerals 1 - 100,000

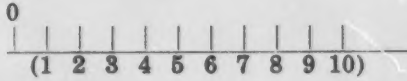
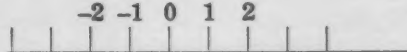
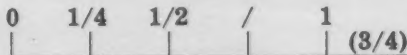
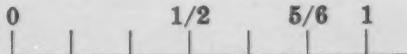
WHOLE NUMBERS

BASIC CHARACTERISTICS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
082 Place Value	08201	A single digit numeral (0 - 9)	Names the place value of the digit	3 (ones)
	08202	A. A two digit numeral (10 - 99)	Names the place value of a given digit in the numeral	<u>29</u> (tens)
		B. A place value name (ones, tens) and a two digit numeral	Identifies the digit in the numeral occupying that place	56 - ones (6)
	08203	A. A three digit numeral (100 - 999)	Names the place value of a given digit in the numeral	<u>375</u> (tens)
		B. A place value name (ones, tens, or hundreds) and a three digit numeral	Identifies the digit occupying that place value	582 - hundreds (5)
	08204	A. A four digit numeral (1000 - 9999)	Names the place value of a given digit in the numeral	<u>3,798</u> (hundreds)
		B. A place value name (ones, tens, hundreds, or thousands) and a four digit numeral	Identifies the digit occupying that place value	7,203 - tens (zero)
085 Expanded Notation	08205	A. A five (or more) digit numeral (10,000 - ...)	Names the place value of a given digit in the numeral	<u>32,964</u> (ten thousands)
		B. Place value names (ones, tens, hundreds, thousands, ten-thousands) and a five (or more) digit numeral	Identifies the digit occupying that place value	460,237, tens (3)
	08501	A. A two digit numeral	Identifies an expanded notation form (using word names) of the two digit numeral	26 = (2 tens + 6 ones)
		B. A two digit numeral	Identifies an expanded notation form (using numerals) of the numeral	26 = (20 + 6)
		C. An expanded notation form (using word names) of a two digit numeral	Identifies the two digit numeral represented by the expanded notation form	forty + six = (46)

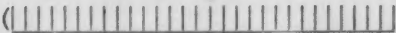
WHOLE NUMBERS

BASIC CHARACTERISTICS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
085 Expanded Notation (continued)	08502	A. A three digit numeral	Identifies an expanded notation form (using word names) of the numeral	$327 =$ (three hundreds + two tens + seven)
		B. A three digit numeral	Identifies an expanded notation form (using numerals) of the numeral	$417 =$ $(400 + 10 + 7)$
		C. An expanding notation form (using word names) of a three digit numeral	Identifies the three digit numeral represented by the expanded notation form	One hundred + seven tens + nine = (179)
	08503	A. A number greater than 1,000	Identifies an expanded notation form (using word names) of the number	$6,037 =$ (Six thousands + three tens + seven)
		B. A number greater than 1,000	Identifies an expanded notation form (using numerals) of the numeral	$8,123 =$ $(8,000 + 100 + 20 + 3)$
		C. An expanded notation form (using word names) of a number greater than 1,000	Identifies the multi-digit numeral represented by the expanded notation form	Two thousand + three thousand + sixteen = $(2,316)$
088 Number Line	08801	A number line representation of the whole numbers 1 through 10, with numbers missing	Identifies one or more numbers missing from the number line	 (5, 8, 10)
	08802	A number line	Identifies points on the number line representing the whole numbers (1 - 10)	
	08803	Several positive and negative numbers and zero on a number line	Continues sequence in positive or negative directions	
	08804	A. Unlabeled point in a sequence of labeled points on a rational number line	Names the point	 $(3/4)$
		B. The name of a rational number and a rational number line	Identifies the point	 Identify "1/3"

WHOLE NUMBERS

BASIC CHARACTERISTICS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
083 Number Line (continued)	08805	A positive or negative whole number (-15 to $+15$)	Locates the point on a number line corresponding to the number	Locate -12 on the number line 0  (x)
091 Even/Odd Numbers	09101	A. A collection of numbers (between 1 and 1,000) B. The names "even" and "odd" and a group of numbers	Names each number as "even" or "odd" Identifies collection of numbers as even or odd	16 (even) ; 327 (odd) "Underline the odd numbers" (<u>1</u> , 46, <u>7</u> , <u>257</u> , <u>13</u> , 6, ...)
094 Composite/Prime Numbers	09401	A. A definition of prime numbers B. A list containing both prime and composite numbers	Identifies the correct definition of prime numbers Identifies the prime numbers in the list	1. A prime number has only two factors. 2. A prime number has only one factor. (1. is correct) 1, 3, 47, 8, 19, 21 (3, 47, 19)

WHOLE NUMBERS

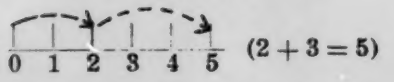
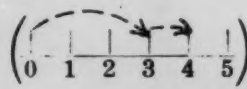
DISPLAY 28

ADDITION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
097 Terms ("Sum," etc.) and Signs ("=")	09701	A. An example of an addition problem	Names the various parts in the problem using the terms of addition	$4 + 7 = \underline{11}$ (sum)
		B. The names of terms used in addition (sum, addend)	Identifies the terms by locating appropriate numeral(s) in written addition problems	$6 + 4 = 10$, "sum" (<u>10</u>)
		C. The operation sign for addition	Names the sign	"+" (plus)
100 Associative, Commutative Relations	10001	An example of an associative relation	Identifies example as an associative relation	$(3 + 5) + 8 = 3 + (5 + 8)$ (associative)
	10002	An example of a commutative relation	Identifies example as a commutative relation	$2 + 3 = 3 + 2$ (commutative)
103 Estimation of Column Addition	10301	An addition sentence with four or more addends and missing sum	Identifies estimate of sum by rounding addends to nearest ten	$8 + 4 + 9 + 17 = \underline{\hspace{1cm}}$ (40)
	10302	An addition sentence with four or more addends and an estimated sum	Names the estimation technique (rounding by tens, hundreds, etc.) that was used	$32 + 8 + 11 + 23 = \underline{70}$ (rounding by tens)
106 Expanded Notation Form	10601	A. An addition sentence (involving no regrouping)	Identifies an expanded notation solution to the addition sentence	$22 + 7 = (20 + 2 + 7 = 20 + 9 = 29)$
		B. An addition sentence (involving no regrouping) in expanded notation form	Identifies a number sentence corresponding to the expanded notation form	$40 + 3 + 5$ (43 + 5)
	10602	A. An addition sentence (involving regrouping)	Identifies an expanded notation solution to the number sentence	$24 + 7 = (20 + 4 + 7 = 20 + 10 + 1 = 31)$
		B. An addition sentence (involving regrouping)	Identifies a number sentence corresponding to the expanded notation form	$40 + 6 + 7 = 40 + 13 = 53$ (40 + 7)
109 Using Word Names	10901	A. An addition number sentence using word names	Identifies the corresponding number sentence using numerals	Three plus six is nine ($3 + 6 = 9$)
		B. A number sentence using numerals	Identifies the corresponding number sentence using word names	$3 + 6 = 9$ (Three plus six is nine)

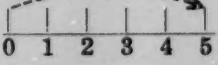
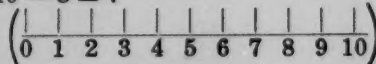
WHOLE NUMBERS

ADDITION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
115 On a Number Line	11501	A. A number line representation of an addition number sentence	Identifies a corresponding number sentence	
		B. An addition number sentence	Identifies a number line expression of the number sentence	$3 + 1 = 4$ 
118 Basic Addition Facts	11801	1 digit + 1 digit = sum less than 10	Identifies the sum	$3 + 4 = \underline{\quad\quad} \quad (7)$
	11802	1 digit + 1 digit = sum greater than or equal to 10	Identifies the sum	$8 + 8 = \underline{\quad\quad} \quad (16)$
121 Two Addends, No Regrouping	12101	2 digits + 1 digit	Identifies the sum	$24 + 3 = \underline{\quad\quad} \quad (27)$
	12102	2 digits + 2 digits	Identifies the sum	$33 + 12 = \underline{\quad\quad} \quad (45)$
	12103	2 digit multiple of 10 + 2 digit multiple of 10	Identifies the sum	$40 + 50 = \underline{\quad\quad} \quad (90)$
	12104	3 digits + 3 digits	Identifies the sum	$111 + 343 = \underline{\quad\quad} \quad (454)$
124 Two Addends, Regrouping	12401	2 digits + 1 digit	Identifies the sum	$17 + 5 = \underline{\quad\quad} \quad (22)$
	12402	2 digits + 2 digits	Identifies the sum	$47 + 26 = \underline{\quad\quad} \quad (73)$
	12403	2 digit multiple of 10 + 2 digit multiple of 10	Identifies the sum	$60 + 80 = \underline{\quad\quad} \quad (140)$
	12404	3 digits (with 0 in tens place) + 2 digits	Identifies the sum	$701 + 89 = \underline{\quad\quad} \quad (790)$
	12405	3 digits + 3 digits	Identifies the sum	$628 + 937 = \underline{\quad\quad} \quad (1,565)$
127 Multiple Addends, Regrouping	12701	4 addends: Each addend is a multiple of 10 less than 100	Identifies the sum	$70 + 20 + 50 + 90 = \underline{\quad\quad} \quad (230)$
	12702	4 addends: Each addend is a multiple of 100	Identifies the sum	$1,600 + 100 + 500 + 8,000 = \underline{\quad\quad} \quad (10,200)$
	12703	4 addends with varying number of digits	Identifies the sum	$2,754 + 22 + 1,875 + 542 = \underline{\quad\quad} \quad (5,193)$

WHOLE NUMBERS

SUBTRACTION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
130 Terms and Signs	13001	A. The operation sign for subtraction B. The names "minus" and "difference"	Names the sign Identifies the minus sign and the difference	"—" (minus) (↓) "Difference" ($5 - 3 = 2$)
137 As Inverse Addition	13701	An open number addition sentence with missing addend	Identifies the process for finding a solution to the sentence as subtraction	$8 + \underline{\quad} = 12$ (4)
141 Expanded Notation Solution—No Regrouping	14101	A. A subtraction number sentence B. A subtraction number sentence in expanded notation form	Identifies an expanded notation solution to the number sentence Identifies the corresponding subtraction problem	$37 - 12 = \underline{\quad}$ ($30 + 7 - 10 - 2 = \underline{\quad}$) ($30 - 10 + 7 - 2 = \underline{\quad}$) ($20 + 5 = 25$) $50 + 6 - 20 - 2 = \underline{\quad}$ $50 - 20 + 6 - 2 = \underline{\quad}$ $30 + 4 = 34$ ($56 - 22$)
144 Expanded Notation Solution—Regrouping	14401	A. A subtraction number sentence B. An expanded notation solution to a subtraction problem	Identifies an expanded notation solution to the number sentence Identifies the corresponding subtraction problem	$72 - 39 = \underline{\quad}$ ($70 + 2 - 30 - 9 = \underline{\quad}$) ($60 + 12 - 30 - 9 = \underline{\quad}$) ($60 - 30 + 12 - 9 = \underline{\quad}$) ($30 + 3 = 33$) $40 - 20 + 13 - 7 = \underline{\quad}$ $20 + 6 = 26$ ($53 - 27$)
147 Number Line Subtraction	14701	A. A number line representation of a subtraction number sentence B. A subtraction number sentence	Identifies a subtraction number sentence corresponding to the number line representation Identifies a number line expression of the subtraction number sentence	 (5 - 3 = 2) $10 - 3 = 7$ 
150 Using Word Names	15001	A. A subtraction number sentence using word names B. A subtraction number sentence using numerals	Identifies the corresponding subtraction number sentence using numerals Identifies the subtraction number sentence using word names	Six minus four is two ($6 - 4 = 2$) $7 - 2 = 5$ (Seven minus two is five)

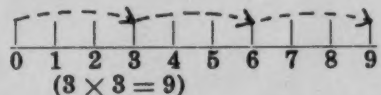
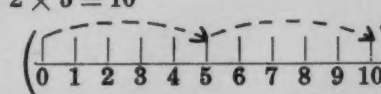
WHOLE NUMBERS

SUBTRACTION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
153 Computation Involving No Regrouping	15301	1 digit — 1 digit	Computes difference	$9 - 3 = \underline{\quad}$ (6)
	15302	2 digits — 1 digit	Computes difference	$18 - 3 = \underline{\quad}$ (15)
	15303	2 digits — 2 digits	Computes difference	$47 - 34 = \underline{\quad}$ (13)
	15304	3 digits — 3 digits	Computes difference	$875 - 521 = \underline{\quad}$ (354)
	15305	3 digits — 3 digits (with 0 in tens place)	Computes difference	$594 - 203 = \underline{\quad}$ (391)
156 Computation Involving Regrouping	15306	4 digits — 3 digits	Computes difference	$5,743 - 321 = \underline{\quad}$ (5,422)
	15601	2 digits — 2 digits	Computes difference	$86 - 69 = \underline{\quad}$ (17)
	15602	3 digits — 3 digits	Computes difference	$621 - 414 = \underline{\quad}$ (207)
	15603	3 digits — 3 digits (two regroupings)	Computes difference	$455 - 378 = \underline{\quad}$ (77)
	15604	3 digits (with 1 in tens place) — 3 digits (two regroupings)	Computes difference	$415 - 378 = \underline{\quad}$ (37)
	15605	3 digits (with 0 in tens place) — 3 digits (two regroupings)	Computes difference	$702 - 335 = \underline{\quad}$ (367)
	15606	4 digits — 3 digits (two regroupings)	Computes difference	$4,364 - 176 = \underline{\quad}$ (4,188)
	15607	4 digits (with 0 in tens and hundreds place) — 3 digits (repeated regrouping)	Computes difference	$6,004 - 525 = \underline{\quad}$ (5,479)
	15608	6 digits or less — 6 digits or less (repeated regrouping)	Computes difference	$672,145 - 18,976 = \underline{\quad}$ (653,169)

WHOLE NUMBERS

MULTIPLICATION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
159 Terms and Signs	15901	A. An example of a multiplication problem B. The names of terms used in multiplication	Names the terms used in multiplication (factor; product) Identifies the terms by locating appropriate numeral(s) in written multiplication problem	$3 \times 5 = 15$ (3 and 5 are factors. 15 is the product.) "product" ($4 \times 6 = 24$)
165 Represented as Physical Models	16501	A. An array of objects or dots B. A multiplication sentence involving whole numbers	Identifies the corresponding multiplication problem Identifies an array (objects or pictures) representing the multiplication sentence	$\begin{array}{ccccc} \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \end{array}$ ($3 \times 5 = 15$) $2 \times 4 = 8$ $\left(\begin{array}{cccc} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{array} \right)$
168 Incomplete Multiplication Sentences	16801	A. A multiplication sentence with a missing term or operation symbol B. A multiplication sentence involving whole numbers with the product missing	Identifies the missing term or operational symbol in the multiplication sentence Identifies the product by estimation	$5 (\_) 4 = 20$ ($\times$) $18 \times 11 = \_\_\_\_$ ($20 \times 10 = 200$)
171 Repeated Addition Sentences	17101	A. A multiplication problem involving two factors B. A repeated addition problem with identical addends	Identifies a repeated addition sentence representing the multiplication problem Identifies a number phrase representing the repeated addition sentence	$3 \times 4 = \_\_\_\_$ ($4 + 4 + 4$ or $3 + 3 + 3 + 3$) $8 + 8 + 8 + 8 + 8 =$ (5×8)
174 On a Number Line	17401	A. A number line representation of a product B. A multiplication sentence	Identifies the multiplication sentence corresponding to the number line representation Identifies a number line representation of the multiplication sentence	 ($3 \times 3 = 9$) $2 \times 5 = 10$ 

WHOLE NUMBERS

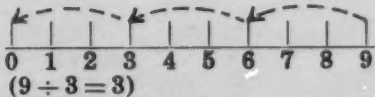
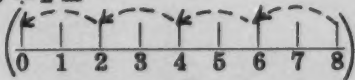
DISPLAY 30
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MULTIPLICATION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
177 Distributive, Associative Commutative Relations	17701	An example of the distributive property	Identifies number sentence as an example of the distributive property	$8 \times (3 + 4) = 8 \times 3 + 8 \times 4$ (Distributive)
	17702	An example of the associative property of multiplication	Identifies number sentence as an example of the associative property	$(3 \times 5) \times 8 = 3 \times (5 \times 3)$ (Associative)
	17703	An example of the commutative property of multiplication	Identifies number sentence as an example of the commutative property	$2 \times 3 = 3 \times 2$ (Commutative)
180 Basic Facts	18001	1 digit (0 - 9) $\times$ 1 digit (0 - 9)	Computes product	$3 \times 2 = \underline{\quad}$ (6)
183 Involving No Regrouping	18301	2 digits $\times$ 1 digit	Computes product	$43 \times 2 = \underline{\quad}$ (86)
	18302	2 digits (multiple of ten) $\times$ 1 digit	Computes product	$20 \times 3 = \underline{\quad}$ (60)
	18303	3 digits $\times$ 1 digit	Computes product	$324 \times 2 = \underline{\quad}$ (648)
	18304	3 digits (zero in ones place) $\times$ 1 digit	Computes product	$120 \times 4 = \underline{\quad}$ (480)
	18305	3 digits (multiple of 100) $\times$ 1 digit	Computes product	$200 \times 3 = \underline{\quad}$ (600)
	18306	2 digits $\times$ 2 digits	Computes product	$44 \times 21 = \underline{\quad}$ (924)
	18307	3 digits $\times$ 2 digits	Computes product	$321 \times 32 = \underline{\quad}$ (10,272)
	18308	3 digits (zero in tens place) $\times$ 2 digits	Computes product	$403 \times 12 = \underline{\quad}$ (4,836)
	18309	3 digits $\times$ 3 digits	Computes product	$421 \times 212 = \underline{\quad}$ (89,252)
	18310	3 digits (zero in tens place) $\times$ 3 digits	Computes product	$302 \times 323 = \underline{\quad}$ (97,546)
	18311	3 digits (multiple of 100) $\times$ 3 digits	Computes product	$600 \times 431 = \underline{\quad}$ (258,600)
186 Involving Regrouping	18601	2 digits $\times$ 1 digit	Computes product	$68 \times 4 = \underline{\quad}$ (272)
	18602	3 digits (zero in tens place) $\times$ 1 digit	Computes product	$409 \times 6 = \underline{\quad}$ (2,454)
	18603	2 digits $\times$ 2 digits	Computes product	$38 \times 73 = \underline{\quad}$ (2,774)
	18604	3 digits $\times$ 2 digits	Computes product	$915 \times 47 = \underline{\quad}$ (43,005)
	18605	3 digits (zero in tens place) $\times$ 2 digits	Computes product	$802 \times 94 = \underline{\quad}$ (75,388)
	18606	3 digits $\times$ 3 digits	Computes product	$735 \times 499 = \underline{\quad}$ (366,765)
	18607	3 digits (zero in tens place) $\times$ 3 digits	Computes product	$109 \times 357 = \underline{\quad}$ (38,913)

WHOLE NUMBERS

DIVISION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
189 Terms and Signs	18901	A. An example of a division problem	Names the terms used in division (quotient, remainder)	$\begin{array}{r} 3 \overline{) 7} \\ 6 \\ \hline 1 \end{array}$ ② (quotient) ① (remainder)
		B. The names of terms used in division	Identifies the terms by locating appropriate numeral(s) in written division problems	"remainder" $\left(\begin{array}{r} 6 \\ 2 \overline{) 13} \\ 12 \\ \hline 1 \end{array} \right)$ (division) "÷" " / "
		C. The symbols for division	Identifies the operation symbolized	
192 As Repeated Subtraction	19201	A repeated subtraction problem	Identifies the operational equivalent of division and subtraction	"How many 2's can you subtract from 8?" (4; thus $8 \div 2 = 4$)
194 As An Equivalent Multiplication Sentence	19401	A. A division fact or sentence	Identifies a multiplication fact or sentence equivalent to the division fact or sentence	$8 \div 4 = 2$ ($2 \times 4 = 8$)
		B. A multiplication fact or sentence	Identifies a division fact or sentence equivalent to the multiplication fact or sentence	$3 \times 5 = 15$ ($15 \div 5 = 3$) or ($15 \div 3 = 5$)
196 On a Number Line	19601	A. A number line representation of a division fact	Identifies the division fact corresponding to the number line representation	 $9 \div 3 = 3$
		B. A division fact	Identifies a number line representation of the division fact	$8 \div 2 =$ 
198 As An Incomplete Division Sentence	19801	An open division sentence	Identifies the missing term or operational symbol in an incomplete division sentence	$10 \div \text{---} = 5$ (2)

WHOLE NUMBERS

DIVISION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
201 As Multiples of 10	20101	A division problem	Identifies the largest multiple of 10 which when multiplied by the divisor is less than or equal to the dividend	$147 \div 6 = \underline{\quad} \quad (20)$
204 Single Digit Divisor and Dividend, Remainder = 0	20401	$1 \text{ digit} \div 1 \text{ digit}$	Computes quotient	$8 \div 2 \text{ or } 2 \overline{)8} = \underline{\quad} \quad (4)$
207 Single Digit Divisor and Dividend, Remainder > 0	20701	$1 \text{ digit} \div 1 \text{ digit}$	Computes quotient	$7 \div 3 \quad (2 \text{ R}1)$
210 Multiple Digit Divisor or Dividend, Remainder = 0	21001	$2 \text{ digits} \div 1 \text{ digit}$	Computes quotient	$12 \div 4 = \underline{\quad} \quad (3)$
	21002	$2 \text{ digits} \div 2 \text{ digits}$	Computes quotient	$75 \div 25 = \underline{\quad} \quad (3)$
	21003	$2 \text{ digits (multiple of 10)} \div 2 \text{ digits (multiple of 10)}$	Computes quotient	$90 \div 30 = \underline{\quad} \quad (3)$
	21004	$3 \text{ digits} \div 2 \text{ digits}$	Computes quotient	$135 \div 15 = \underline{\quad} \quad (9)$
	21005	More than 3 digits $\div$ 3 digits	Computes quotient	$1,135 \div 227 = \underline{\quad} \quad (5)$
213 Multiple Digit Divisor or Dividend, Remainder > 0	21301	$2 \text{ digits} \div 1 \text{ digit}$	Computes quotient	$16 \div 5 = \underline{\quad} \quad (3 \text{ R}1)$
	21302	$2 \text{ digits} \div 2 \text{ digits}$	Computes quotient	$92 \div 13 = \underline{\quad} \quad (7 \text{ R}1)$
	21303	$3 \text{ digits} \div 2 \text{ digits}$	Computes quotient	$623 \div 22 = \underline{\quad} \quad (28 \text{ R}7)$
	21304	More than 3 digits $\div$ 3 digits	Computes quotient	$3,325 \div 104 = \underline{\quad} \quad (31 \text{ R}101)$
	21305	More than 3 digits (zero tens or hundreds) $\div$ 3 digits	Computes quotient	$39,702 \div 367 = \underline{\quad} \quad (108 \text{ R}66)$

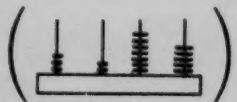
WHOLE NUMBERS

APPLICATIONS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
216 Addition Word Problems	21601	A. A word problem involving the addition of whole numbers	Identifies an addition procedure for solving the problem	"How many children are in a small country school where there are 28 first graders, 14 second graders and 30 third graders only?" (add 28, 14, and 30)
		B. A word problem involving the addition of whole numbers	Identifies an addition number sentence for solving the problem	($28 + 14 + 30 = \underline{\quad}$)
		C. A word problem involving the addition of whole numbers	Identifies the answer to the problem	(72)
219 Subtraction Word Problems	21901	A. A word problem involving the subtraction of whole numbers	Identifies a subtraction procedure for solving the problem	"There are 36 children in a classroom. 18 are girls. How many boys are there?" (subtract 18 from 36)
		B. A word problem involving the subtraction of whole numbers	Identifies a subtraction number sentence for solving the problem	($36 - 18 = \underline{\quad}$)
		C. A word problem involving the subtraction of whole numbers	Identifies the answer to the problem	(18)
222 Multiplication Word Problems	22201	A. A word problem involving the multiplication of whole numbers	Identifies a multiplication procedure for solving the problem	"An apple orchard has 12 rows of trees with 8 trees in each row. How many trees are in the orchard?" (multiply 8 by 12)
		B. A word problem involving the multiplication of whole numbers	Identifies a multiplication number sentence for solving the problem	($8 \times 12 = \underline{\quad}$)
		C. A word problem involving the multiplication of whole numbers	Identifies the answer to the problem	(96)
225 Division Word Problems	22501	A. A word problem involving the division of whole numbers	Identifies a division procedure for solving the problem	"A farmer wants to put all 40 of his sheep in 8 pens. If he puts the same number of sheep in each pen, how many will there be in each pen?" (divide 40 by 8)

WHOLE NUMBERS

APPLICATIONS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
225 Division Word Problems (continued)	22501	B. A word problem involving the division of whole numbers	Identifies a division number sentence for solving the problem	$(40 \div 8 = \underline{\quad})$
		C. A word problem involving the division of whole numbers	Identifies the answer to the problem	(5)
228 Addition Using Devices	22801	A number greater than 1,000	Identifies an abacus (or similar device) representation of the number greater than 1,000	3,275 
231 Addition as Patterns	23101	A. An incomplete pattern of whole numbers generated by an operation of addition or subtraction	Identifies a missing whole number	2, 4, 6, 8, $\underline{\quad}$ (10)
		B. A complete pattern of whole numbers generated by an operation of addition or subtraction	Identifies the operation needed to generate the pattern	25, 20, 15, 10, 5, 0 (subtraction of 5)
	23102	Two whole numbers	Identifies a rational number between the two rational numbers	167, 173 (168, 169, 170, 171 or 172)
	23103	An incomplete Pascal's triangle	Identifies a missing number in the incomplete triangle	$ \begin{array}{c} 1 \\ 1 \ 1 \\ 1 \ 2 \ 1 \\ 1 \ 3 \ 3 \ 1 \\ 1 \ 4 \ 6 \ \underline{\quad} \ 1 \end{array} $ (4)
234 Mixed Operations (+, -, ×, ÷) Word Problems	23401	A. A word problem involving mixed operations (+, -, ×, ÷) on whole numbers	Identifies an arithmetic procedure for solving the problem	For Christmas Lucy got \$5 from her uncle and \$14 from her grandmother. After she spent \$7 on a new blouse she put the money into two savings accounts, the same amount in each account. How much did Lucy put in each account?" (add 5 and 14, subtract 7, divide result by 2)

WHOLE NUMBERS

APPLICATIONS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
234 Mixed Operations Word Problems (continued)	23401	B. A word problem involving mixed operations (+, —, ×, ÷) on whole numbers	Identifies a number sentence for solving the problem	$[(5 + 14 - 7) \div 2 = \underline{\quad}]$
		C. A word problem involving mixed operations (+, —, ×, ÷) on whole numbers	Identifies the answer to the problem	(\$6)
237 Unfinished Numbers	23701	A 2-digit number with the ones place blank	Identifies a digit which (if placed in the ones place) makes the number divisible by 3	5__ (1, 4, 7)
	23702	A 3-digit number with the ones place blank	Identifies a digit which (if placed in the ones place) makes the number divisible by 4	14__ (0, 4, 8)
	23703	A 2-digit number with the ones place blank	Identifies a digit which (if placed in the ones place) makes the number divisible by 6	7__ (2, 8)
	23704	A 3-digit number with the ones place blank	Identifies a digit which (if placed in the ones place) makes the number divisible by 9	25__ (2)
	23705	A whole number	Identifies numbers which can be divided evenly into the given number	1,236 (2, 3, 4, 6)

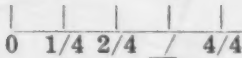
FRACTIONS

BASIC CHARACTERISTICS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
243 Terms	24301	A. The terms "numerator" and "denominator" B. A fraction	Identifies the corresponding parts of a fraction Names the parts of the fraction	"Numerator" ($\rightarrow 3/4$) $1/3$ (numerator is 1; denominator is 3)
246 Congruency of Shapes	24601	Shapes divided into congruent parts and divided into noncongruent parts	Identifies shapes as being divided into either congruent or noncongruent parts and shapes	 (Congruent Parts)  (Noncongruent Parts)
249 Physical Representations	24901	Objects or shapes divided into two, three, or four congruent parts	Names the whole as "two-halves," "three-thirds," or "four-fourths" and names the parts "one-half," "one-third," or "one fourth"	 (Halves)  (Thirds)  (Fourths)
	24902	An object or shape divided into two, three, or four congruent parts with one or more of the parts shaded or otherwise identified	Identifies the fraction corresponding to the shaded part of the (whole) shape or object	 ($1/2$)  ($1/4$)
	24903	A fraction ($1/2$, $1/3$, or $1/4$)	Identifies the part of a whole shape or object corresponding to the fraction	$1/3$ ()
	24904	A shape or object divided into two, three, or four congruent parts	Identifies the numerator of a fraction as describing a number of parts and the denominator the total parts in the whole	 $2/3$
	24905	A fraction	Identifies the parts of a shape or object described by the numerator and the denominator	$3/4$ ()

FRACTIONS

BASIC CHARACTERISTICS

SUBTOPICS	GIVEN	THE STUDENT	EXAMPLE
249 Physical Representations of Fractions (continued)	24906 A number line marked by a sequence of fractions (with one missing) with the same denominator	Identifies the missing fraction	 $(3/4)$
252 Identification of Mixed vs. Improper Fractions	25201 Figures representing an improper fraction	Identifies a figure representing the fraction in mixed numeral form	 $5/4$ $1 \frac{1}{4}$
255 Physical Representations of Mixed Number Fractions	25501 Areas representing fractions in mixed numeral form (wholes and fractional parts)	Identifies a figure representing the corresponding improper fraction	 $1 \frac{1}{3}$ $4/3$
258 Ordering Fractions	25801 A collection of fractions with like denominators	Places the fractions in order from smallest to largest	$1/6, 5/6, 3/6$ $(1/6, 3/6, 5/6)$
	25802 A collection of fractions with units as numerators and unlike denominators	Places fractions in order from largest to smallest	$1/4, 1/2, 1/6$ $(1/2, 1/4, 1/6)$
	25803 A collection of fractions with numerators greater than one and unlike denominators	Places fractions in order from smallest to largest	$3/7, 3/4, 2/3$ $(3/7, 2/3, 3/4)$

FRACTIONS

EQUIVALENT FRACTIONS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
261 Prime Factoring	26101	A. A composite number	Identifies the prime factorization of the number	$60 = (2 \times 2 \times 3 \times 5)$
		B. A prime factorization	Names the composite number represented by the prime factorization	$5 \times 3 \times 7 \times 2 = (210)$
264 Simplifying Fractions	26401	A. A proper (reduced) fraction	Identifies three fractions equivalent to the given fraction	$3/4$ (6/8, 9/12, 12/16)
		B. A proper (nonreduced) fraction	Identifies an equivalent, reduced fraction	$10/15$ (2/3)
	26402	A. An improper (reduced) fraction	Identifies three fractions equivalent to the given fraction	$7/4$ (14/8, 21/12, 28/16)
		B. An improper (nonreduced) fraction	Identifies an equivalent, reduced fraction	$18/8$ (9/4)
	26403	A. A mixed (reduced) fraction	Identifies three fractions equivalent to the given fraction	$1\ 1/2$ (6/4, 9/6, 12/8)
		B. A mixed (nonreduced) fraction	Identifies an equivalent, reduced fraction	$8\ 4/6$ (8 2/3 or 26/3)

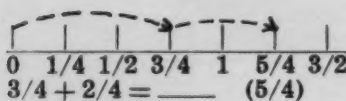
FRACTIONS

LCM AND GCF

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
267	Least Common Multiple (LCM)	26701 A. Two whole numbers less than 10 such that LCM is either of the numbers	Finds the least common multiple	4, 8 (8)
		B. Three or more whole numbers such that LCM is any of the numbers	Finds the least common multiple	4, 8, 16 (16)
270	Greatest Common Factor (GCF)	27001 Two whole numbers such that the GCF is equal to one of the numbers	Finds the greatest common factor	12, 36 (12)
		27002 Two whole numbers such that the GCF is not either of the numbers	Finds the greatest common factor	15, 25 (5)
		27003 Two prime numbers	Finds the greatest common factor	43, 23 (1)
		27004 Three or more whole numbers	Finds the greatest common factor	8, 18, 24 (2)

FRACTIONS

ADDITION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
273 Number Line Representation	27301	A number line representation of addition of fractions with like denominators	Identifies the number sentence corresponding to the number line representation	 $0 \quad 1/4 \quad 1/2 \quad 3/4 \quad 1 \quad 5/4 \quad 3/2$ $3/4 + 2/4 = \underline{\quad} \quad (5/4)$
	27302	A number line representation of addition of fractions with like denominators	Identifies sum (in simplest terms)	$(5/4 \text{ or } 1 \frac{1}{4})$
276 Like Denominators	27601	Each addend is proper, the denominators are equal, and each numerator equals 1	Computes the sum	$1/5 + 1/5 = \underline{\quad} \quad (2/5)$
	27602	Each addend is proper, the denominators are equal, and each numerator is greater than 1	Computes the sum	$3/7 + 2/7 = \underline{\quad} \quad (5/7)$
	27603	One addend is proper, one is improper, and the denominators are equal	Computes the sum	$5/3 + 1/3 = \underline{\quad} \quad (6/3 \text{ or } 2)$
	27604	One addend is proper, one is mixed, and the denominators are equal	Computes the sum	$2/3 + 1 \frac{1}{3} = \underline{\quad}$ $(6/3, 2 \text{ or } 1 \frac{2}{3})$
	27605	Both addends are improper, and the denominators are equal	Computes the sum	$5/4 + 7/4 = \underline{\quad} \quad (12/4 \text{ or } 3)$
	27606	Both addends are mixed, the denominators are equal, and each numerator is 1	Computes the sum	$1 \frac{1}{4} + 3 \frac{1}{4} = \underline{\quad}$ $(4 \frac{2}{4} \text{ or } 4 \frac{1}{2})$
	27607	Both addends are mixed, the denominators are equal, and each numerator is greater than 1	Computes the sum	$5 \frac{2}{7} + 11 \frac{3}{7} = \underline{\quad}$ $(16 \frac{5}{7})$

FRACTIONS

ADDITION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
279 Unlike denominators—Least Common Denominator is One of the Denominators (LCD)	27901	Each addend is proper, the denominators are unequal, each numerator equals 1, and LCD is one of the denominators	Computes the sum	$1/3 + 1/6 = \text{---}$ (3/6 or 1/2)
	27902	Each addend is proper, the denominators are unequal, each numerator is greater than 1, and LCD is one of the denominators	Computes the sum	$2/5 + 3/10 = \text{---}$ (7/10)
	27903	One addend is proper, one is improper, the denominators are unequal, and LCD is one of the denominators	Computes the sum	$3/4 + 9/8 = \text{---}$ (15/8 or 1 7/8)
	27904	One addend is proper, one is mixed, the denominators are unequal, and LCD is one of the denominators	Computes the sum	$3/4 + 3 1/8 = \text{---}$ (31/8 or 3 7/8)
	27905	Both addends are improper, the denominators are unequal, and LCD is one of the denominators	Computes the sum	$3/2 + 5/4 = \text{---}$ (11/4 or 2 3/4)
	27906	One addend is improper, one is mixed, the denominators are unequal, and LCD is one of the denominators	Computes the sum	$5/4 + 1 3/8 = \text{---}$ (2 5/8 or 21/8)
	27907	Both addends are mixed, the denominators are unequal, each numerator is 1, and LCD is one of the denominators	Computes the sum	$2 1/6 + 8 1/12 = \text{---}$ (10 3/12 or 10 1/4)
	27908	Both addends are mixed, the denominators are unequal, each numerator is greater than 1, and LCD is one of the denominators	Computes the sum	$6 2/3 + 9 5/6 = \text{---}$ (16 1/2)

FRACTIONS

DISPLAY 36
(Continued)

ADDITION

SUBTOPICS	GIVEN	THE STUDENT	EXAMPLE
282 Unlike Denom- inators—LCD is Neither Denominator	28201 Each addend is proper, the denominators are unequal, each numerator equals 1, and LCD is neither of the denominators	Computes the sum	$1/2 + 1/3 = \text{---} \quad (5/6)$
	28202 Each addend is proper, the denominators are unequal, each numerator is greater than 1, and LCD is neither of the denominators	Computes the sum	$4/5 + 2/3 = \text{---} \quad (22/15 \text{ or } 1 \frac{7}{15})$
	28203 One addend is proper, one is improper, the denominators are unequal, and LCD is neither of the denominators	Computes the sum	$5/3 + 3/7 = \text{---}$ (44/21 or $2 \frac{2}{21}$)
	28204 One addend is proper, one is mixed, the denominators are unequal, and LCD is neither of the denominators	Computes the sum	$3/7 + 2 \frac{1}{2} = \text{---}$ (2 13/14 or 41/14)
	28205 Both addends are improper, the denominators are unequal, and LCD is neither of the denominators	Computes the sum	$7/3 + 6/5 = \text{---}$ (53/15 or $3 \frac{8}{15}$)
	28206 One addend is improper, one is mixed, the denominators are unequal, and LCD is neither of the denominators	Computes the sum	$5/3 + 1 \frac{3}{4} = \text{---}$ (41/12 or $3 \frac{5}{12}$)
	28207 Both addends are mixed, the denominators are unequal, each numerator is 1, and LCD is neither of the denominators	Computes the sum	$21 \frac{1}{5} + 15 \frac{1}{2} = \text{---}$ (36 7/10)
	28208 Both addends are mixed, the denominators are unequal, each numerator is greater than 1, and LCD is neither of the denominators	Computes the sum	$12 \frac{3}{7} + 15 \frac{4}{5} = \text{---}$ (28 8/35)

FRACTIONS

SUBTRACTION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
285 Number Line Representation	28501	A number line representation of the subtraction of like fractions	Identifies a number sentence corresponding to the number line representation	$\begin{array}{ c c c c c c c } \hline 0 & 1/7 & 2/7 & 3/7 & 4/7 & 5/7 & 6/7 \\ \hline \end{array}$ $(5/7 - 3/7 = 2/7)$
	28502	A number line representation of the subtraction of like fractions	Identifies the difference (in simplest terms)	$(2/7)$
288 Like Denominators	28801	Both fractions are proper, and the denominators are equal	Computes the difference	$3/5 - 2/5 = \underline{\hspace{1cm}} \quad (1/5)$
	28802	The first fraction is improper, the second is proper, and the denominators are equal	Computes the difference	$7/3 - 2/3 = \underline{\hspace{1cm}} \quad (5/3)$
	28803	The first fraction is mixed, the second is proper, and the denominators are equal (no borrowing)	Computes the difference	$4 \frac{3}{5} - 1/5 = \underline{\hspace{1cm}} \quad (4 \frac{2}{5})$
	28804	Both fractions are improper and the denominators are equal	Computes the difference	$7/5 - 6/5 = \underline{\hspace{1cm}} \quad (1/5)$
	28805	One fraction is improper, one is mixed, and the denominators are equal	Computes the difference	$7/3 - 1 \frac{1}{3} = \underline{\hspace{1cm}} \quad (3/3 \text{ or } 1)$
	28806	Both fractions are mixed and the denominators are equal	Computes the difference	$3 \frac{1}{2} - 2 \frac{1}{2} = \underline{\hspace{1cm}} \quad (1)$
291 Unlike Denominators—LCD is One Denominator	29101	Both fractions are proper, and the denominators are unequal, and LCD is one of the denominators	Computes the difference	$7/8 - 1/4 = \underline{\hspace{1cm}} \quad (5/8)$

FRACTIONS

SUBTRACTION

SUBTOPICS	GIVEN	THE STUDENT	EXAMPLE
291 Unlike Denominators—LCD is One Denominator (continued)	29102 The first fraction is improper, the second is proper, the denominators are unequal, and LCD is one of the denominators	Computes the difference	$11/9 - 2/3 = \underline{\hspace{1cm}}$ (5/9)
	29103 The first fraction is mixed, the second is proper, the denominators are unequal, and LCD is one of the denominators (no borrowing)	Computes the difference	$3 \frac{1}{2} - 1/8 = \underline{\hspace{1cm}}$ (3 $\frac{3}{8}$)
	29104 The first fraction is mixed, the second is proper, the denominators are unequal, and LCD is one of the denominators (borrowing)	Computes the difference	$4 \frac{1}{2} - 3/4 = \underline{\hspace{1cm}}$ (3 $\frac{3}{4}$)
	29105 Both fractions are improper, the denominators are unequal, and LCD is one of the denominators	Computes the difference	$12/5 - 13/10 = \underline{\hspace{1cm}}$ (11/10)
	29106 The first fraction is mixed, the second is improper, the denominators are unequal, and LCD is one of the denominators	Computes the difference	$3 \frac{1}{2} - 13/10 = \underline{\hspace{1cm}}$ (2 $\frac{2}{10}$, 2 $\frac{1}{5}$)
	29107 Both fractions are mixed, the denominators are unequal, and LCD is one of the denominators (no borrowing)	Computes the difference	$17 \frac{3}{5} - 12 \frac{1}{10} = \underline{\hspace{1cm}}$ (5 $\frac{5}{10}$ or 5 $\frac{1}{2}$)
	29108 Both fractions are mixed, the denominators are unequal, and LCD is one of the denominators (borrowing)	Computes the difference	$20 \frac{1}{21} - 7 \frac{1}{7} = \underline{\hspace{1cm}}$ (12 $\frac{19}{21}$)

FRACTIONS

DISPLAY 37
(Continued)

SUBTRACTION

SUBTOPICS	GIVEN	THE STUDENT	EXAMPLE
294 Unlike Denominators—LCD is Neither Denominator	29401 Both fractions are proper, the denominators are unequal, and LCD is neither of the denominators	Computes the difference	$5/6 - 3/5 = \underline{\hspace{1cm}} \quad (7/30)$
	29402 The first fraction is improper, the second is proper, the denominators are unequal, and LCD is neither of the denominators	Computes the difference	$13/9 - 1/5 = \underline{\hspace{1cm}} \quad (56/45)$
	29403 The first fraction is mixed, the second is proper, the denominators are unequal, and LCD is neither of the denominators (no borrowing)	Computes the difference	$8 \frac{1}{2} - 1/9 = \underline{\hspace{1cm}} \quad (8 \frac{7}{18})$
	29404 The first fraction is mixed, the second is proper, the denominators are unequal, and LCD is neither of the denominators (borrowing)	Computes the difference	$14 \frac{2}{3} - 4/5 = \underline{\hspace{1cm}} \quad (13 \frac{13}{15})$
	29405 Both fractions are improper, the denominators are unequal, and LCD is neither of the denominators	Computes the difference	$4/3 - 8/7 = \underline{\hspace{1cm}} \quad (4/21)$
	29406 One fraction is improper, one is mixed, the denominators are unequal, and LCD is neither of the denominators	Computes the difference	$4 \frac{1}{3} - 5/4 = \underline{\hspace{1cm}} \quad (3 \frac{1}{12})$
	29407 Both fractions are mixed, the denominators are unequal, and LCD is neither of the denominators (no borrowing)	Computes the difference	$2 \frac{1}{2} - 1 \frac{1}{7} = \underline{\hspace{1cm}} \quad (1 \frac{5}{14})$
	29408 Both fractions are mixed, the denominators are unequal, and LCD is neither of the denominators (borrowing)	Computes the difference	$256 \frac{1}{10} - 139 \frac{2}{3} = \underline{\hspace{1cm}} \quad (116 \frac{13}{30})$

MEASUREMENT

LINEAR

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
447 Error of Measurement	44701	A linear measurement in English or metric units	Finds the greatest possible error	140 meters (10 meters)
	44702	A measure and the greatest possible error of the measure and the accompanying linear measurement	Computes the relative error and expresses it as a fraction, a decimal, and a percent	16 feet; 1 foot (1/16, .0625, 6.25%)
450 Conversions, English Units	45001	A. An English unit of linear measurement and a subunit of the unit	Identifies the number of subunits making up the unit	1 foot ____ inches (12)
		B. An English subunit of linear measurement	Identifies the unit of English linear measurement corresponding to the subunits	Inches (feet)
453 Measurement, English Units	45301	A. An English subunit of linear measurement	Measures the length of an object or line segment using the units	(Depends on object measured)
		B. Several English units of linear measurement and appropriate objects or line segments	Identifies an object or line segment whose length corresponds to a given number of units	(Depends on units given and objects measured)
456 Conversions, Metric Units	45601	A metric unit of linear measurement (km or m) and a subunit of the unit (m, cm, mm)	Identifies the number of subunits making up the unit	1 meter ____ centimeters (100)
459 Measurement, Metric Units	45901	A. A line segment	Measures with a ruler and expresses length to the nearest millimeter	(Depends on line segment to be measured)
		B. Several metric units of linear measurement	Identifies an object or line segment whose length corresponds to a given number of units	(Depends on units given and objects measured)
	45902	A length expressed in metric units and subunits	Expresses the measure in one of the units or subunits using decimal notation	5 meters, 23 centimeters, 5 millimeters (5.235 m or 523.5 cm or 5235 mm)

MEASUREMENT

LINEAR

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
462 Measuring Perimeter	46201	An English unit of linear measurement and a simple geometric shape	Identifies the length of the perimeter of the shape to the nearest unit	Inches (Answer depends on shape chosen)
	46202	A unit of metric linear measurement and a simple geometric shape	Identifies the length of the perimeter of the shape to the nearest unit	Millimeters (Answer depends on shape chosen)
465 Scaling, Maps, and Drawings	46501	A scaled map	Identifies linear distances on a scaled map	(Depends on map used)
	46502	A scaled drawing	Measures lengths on the scaled drawing and converts them to actual lengths	(Depends on drawing used)
	46503	A scale drawing of a figure	Identifies a missing measurement using a ruler and the scale of the drawing	(Depends on drawing used)
	46504	The dimensions of an object or simple geometric shape to be drawn	Identifies an appropriate scale for making a drawing of the object or shape	(Depends on object or shape used)
468 Computing Perimeter	46801	A simple geometric shape	Identifies a formula for computing the perimeter of the shape	Rectangle $(2L + 2W)$ or $[2(L + W)]$
	46802	A simple geometric shape	Computes the perimeter of the shape using a formula ($\pi = 3.14$)	Circle $R = 10''$ ($P = 62.8''$)
471 Word Problems (English Units and Subunits)	47101	A. A word problem involving linear measurements in units and subunits	Identifies conversions of English units and subunits to make addition or subtraction operations possible	"Sally's pet snake has grown 9 inches since last summer. It is now 3 feet long. How long was it last summer?" (3 ft. = 2 ft. 12 in.)
		B. A word problem involving linear measurements in units and subunits	Computes sums or differences to solve word problem	(2 ft. 12 in. — 9 in. = 2 ft. 3 in.)

MEASUREMENT

LINEAR

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
474 Word Problems (Metric Units and Subunits)	47401	A. A word problem involving linear measurements in metric units and subunits	Identifies conversions of metric units and subunits to make addition or subtraction operations possible	"Manuel runs on the school's track team. During practice one day he first ran 3 km, then later he ran 400 m. How many meters did he run altogether?" (3 km = 3,000 m)
		B. A word problem involving linear measurements in metric units and subunits	Computes sums or differences to solve word problem	(3,000 m + 400 m = 3,400 m)
	47402	A problem using applications of area, perimeter, or volume and the following types of measurement in the metric system: linear, square, and cubic	Selects the most appropriate unit that could be used in solving the problem	What unit of measure would you use to measure how big in volume this room is? (cubic meters)

MEASUREMENT

TIME

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
516 Names of Days and Months	51601	The name of a day of the week	Names the following and preceding days of the week	Monday (Tuesday, Sunday)
	51602	The name of a month of the year	Names the following and preceding months	July (August, June)
519 Units and Subunits of Clock Time	51901	A. A unit of time	Identifies an equivalent number of subunits of the given unit	Day (24 hours)
		B. A number of subunits of time equal to a unit of time	Identifies an equivalent unit of time	60 minutes (1 hour)
522 Telling Time	52201	A. A display of clock hands showing an exact hourly time	Identifies the time represented on the clock	3 o'clock displayed on a clock (3:00)
		B. An exact hour of the day (seven o'clock, etc.)	Identifies the corresponding clock representation	7 o'clock (Move hands of clock to show 7:00)
	52202	A. A display of clock hands showing a time in minutes (2:47, etc.)	Identifies the time represented on the clock	2:47 displayed on a clock (2:47)
		B. A time of day in minutes (9:36, etc.)	Identifies the corresponding clock representation	9:36 (move hands of clock to show 9:36)
	52203	A given hour of the day	Names the hour that is one hour later and one hour earlier	Five o'clock (six o'clock, four o'clock)

MEASUREMENT

TEMPERATURE

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
525 Reading a Temperature Fahrenheit Gauge (F°)	52501	A. A temperature gauge graduated in degrees Fahrenheit	Names the scale as Fahrenheit and names temperature to the nearest degree	Temperature gauge showing 52°F (Fahrenheit, 52°)
		B. A given temperature (F°)	Identifies a temperature gauge representing the given temperature	104°F (draws mark to show 104°F on picture of temperature gauge)
528 Reading a Temperature Celsius Gauge (C°)	52801	A. A temperature gauge graduated in degrees Celsius	Names the scale as Celsius and names temperature to the nearest degree	Temperature gauge showing 12°C (Celsius, 12°C)
		B. A given temperature (C°)	Identifies a temperature gauge representing the given temperature	82°C (draws mark to show 82°C on picture of temperature gauge)
	52802	A. (F° or C°) temperature gauge with a temperature below, at, or above the freezing point of water	Identifies the temperature as "at," "below," or "above" the freezing point of water	Temperature gauge showing —5°C ("below freezing")
		B. (F° or C°) temperature gauge with a temperature below, at, or above the boiling point of water	Identifies the temperature as "at," "below," or "above" the boiling point of water	Temperature gauge showing 100°C ("at boiling")

MEASUREMENT

MONEY

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
537 Names of U. S. Coins and Their Values	53701	A. Any one of 5 different U. S. coins	Names the coin	Dime (Dime or 10¢ piece)
		B. The name of any U. S. coin and a collection of coins of different values	Identifies the coin corresponding to the word name	"Quarter" (points to quarter)
	53702	A. Any U. S. coin	Identifies the value of the coin in cents	"Half dollar" (50¢)
		B. A value in cents (1¢, 5¢, 10¢, 25¢, 50¢)	Identifies the corresponding coin	5¢ (Nickel)
540 Value of U. S. Bills	54001	A. A U. S. bill (\$1, \$5, \$10, \$20)	Identifies the value of the bill in dollars	\$5 bill (five dollars)
		B. A value in dollars corresponding to a U. S. bill (one, five, ten or twenty dollars)	Identifies the bill corresponding to the given value	Twenty dollars (\$20 bill)
543 Ordering U. S. Coins	54301	Five different U. S. coins	Identifies the value of the coins in ascending or descending order	5 U. S. coins (places coins in descending order of value)
	54302	Several collections of money, each of whose value is $\leq$ \$5	Identifies the collection having the greatest and least value	2 - \$1 bills, 6 quarters, 1 dime 4 pennies; 3 - \$1 bills, 1 quarter, 6 nickels, 8 pennies (1st collection greatest value, 2nd least)
546 Converting between Equivalent Money Values	54601	A collection of money whose value is $\leq$ \$5	Identifies an equivalent but different collection	A \$1 bill, 2 quarters, 1 dime (3 - 50¢ pieces, 2 nickels)
	54602	Any U. S. coin $> 1¢$	Identifies an equivalent combination of other coins	Quarter (2 dimes, 1 nickel)
	54603	A combination of U. S. coins equal to 5¢, 10¢, 25¢, or 50¢	Identifies an equivalent coin	1 dime, 1 nickel, 10 pennies (quarter)

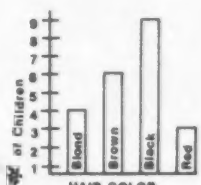
MEASUREMENT

MONEY

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
549 Value of Collections of U. S. Money	54901	A. A collection of coins and U. S. bills totaling $< \$5$	Identifies the value of the collection expressed as dollars and cents (\$____)	3 - \$1 bills, 1 - 50¢ piece, 1 quarter, 2 dimes, 3 pennies (\$3.98)
		B. A value of money expressed as dollars and cents (\$____) $< \$5$	Identifies a collection of coins and U. S. bills equal to the given value	\$1.45 (1 - \$1 bill, 1 quarter, 2 dimes)
552 Addition Problems Involving Money	55201	A. An addition problem involving money using the word names of the coins and bills	Identifies the necessary conversions to make the addition possible	2 quarters + 4 nickels (2 quarters = 10 nickels)
		B. An addition problem involving money using the word names of the coins and bills	Computes sum	(10 nickels + 4 nickels = 14 nickels)
555 Subtraction Problems Involving Money	55501	A. A subtraction problem involving money using word names of the coins and bills	Identifies the necessary conversions to make the subtraction possible	5 dollars — 1 quarter (5 dollars = 4 dollars, 4 quarters)
		B. A subtraction problem involving money using word names of the coins and bills	Computes the difference	(4 dollars, 4 quarters — 1 quarter = 4 dollars, 3 quarters)

PROBABILITY AND STATISTICS

BASIC GRAPHS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE														
603 Tallying	60301	A. A collection of marks tallied by 2s, 3s, 4s, or 5s B. A whole number	Identifies the process as "tallying" and identifies the sum Identifies a collection of tally marks (by 2s, 3s, 4s, 5s) representing the number	 ("tallying," 14) 26()														
606 Bar Graphs	60601	A. A bar graph representing a set of data B. A set of data	Identifies the data display as a "bar graph" and interprets a given bar Identifies a bar graph representing the set of data	 4 children have blond hair 6 children have brown hair 9 children have black hair 3 children have red hair (identifies above bar graph)														
609 Data Tables	60901	A set of data in tabular form	Identifies the data display as a "table" and correctly interprets a cell in the table	Population of Hifa, California <table><tr><th>Year</th><th>Population</th></tr><tr><td>1925</td><td>1,530</td></tr><tr><td>1935</td><td>1,290</td></tr><tr><td>1945</td><td>3,000</td></tr><tr><td>1955</td><td>4,728</td></tr><tr><td>1965</td><td>4,550</td></tr><tr><td>1975</td><td>5,220</td></tr></table> ("Table;" population of Hifa in 1945 was 3,000)	Year	Population	1925	1,530	1935	1,290	1945	3,000	1955	4,728	1965	4,550	1975	5,220
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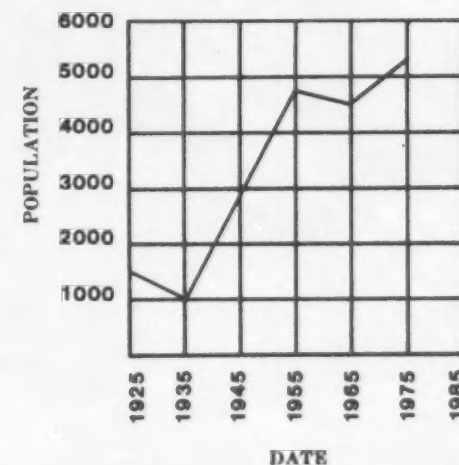
PROBABILITY AND STATISTICS

BASIC GRAPHS

SUBTOPICS	GIVEN	THE STUDENT
612 Line Graphs	61201 A line graph	Identifies the display as a "line graph" and correctly interprets a point on the graph

EXAMPLE

Population of Hifa, California



("Line graph" correctly interprets point A. Point A shows the population of Hifa in 1945 was 3,000.)

SETS

SINGLE SETS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
615 Concept of a Set	61501	A collection of similar objects	Identifies the collection as a set	Group of blue poker chips ("This is a set.")
618 Elements	61801	A. The words "element of"	Identifies the symbol standing for "element of" (ϵ)	"Element of" (ϵ)
		B. The symbol denoting "element of" (ϵ)	Identifies a correct use of the symbol denoting "element of"	ϵ (José ϵ the class — José is a member of the class)
		C. A collection of similar and unlike objects	Identifies those objects belonging to a set using the symbol for "element of"	A collection of numbers— 2, 3, 5, 6, 12, 17, 76 (2 ϵ even numbers)
621 Set Notation for Single Sets	62101	A. A collection of objects	Identifies a set notation description of the collection	The pupils sitting at Table 1 ({John, Mary, Julio, Juanita, Reggi})
		B. Set notation describing a (small) set	Identifies those elements belonging to the set	{1, 6, 23, 0, 14} (The numerals 1, 6, 23, 0, 14)
624 Set Cardinality	62401	A. A finite set of objects	Identifies the cardinality of the set	The set of girls in your class
		B. A cardinal number	Identifies a set having the given cardinal value	6 ({0, 1, 2, 3, 4, 5}) or (any other set having six numbers)
	62402	Given a description of an infinite set	Identifies set notation appropriate to the given collection	Set of whole numbers ({1, 2, 3, 4, ...})
627 Empty Set	62701	A. A set containing no elements	Identifies a correct symbol for the empty set	The number of elephants in this class ({ } or $\emptyset$)
		B. Symbol for the empty (null) set	Identifies a set (empty) corresponding to the symbol for an empty set	$\emptyset$ or { } (The number of fifth graders in this school who are grandmothers)